

Output Relay Electrical Function Module

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* Indicates those sections where changes have occurred since the last printing.

Introduction

Description

The Output Relay Electrical (ORE) Function Module is an interface between the DCM and field devices. This function module provides on/off control of field devices. The ORE features:

- electrically maintained Form C relay and interface logic to enable the DCM to control this relay
- Hand/Off/Auto (HOA) switch for manual control
- feedback indication of the HOA switch setting to the DCM

The ORE Function Module plugs into any one of the bottom ten slots associated with the DCM. Figure 1 shows typical function module locations in the NCU. A five slot panel is pictured.

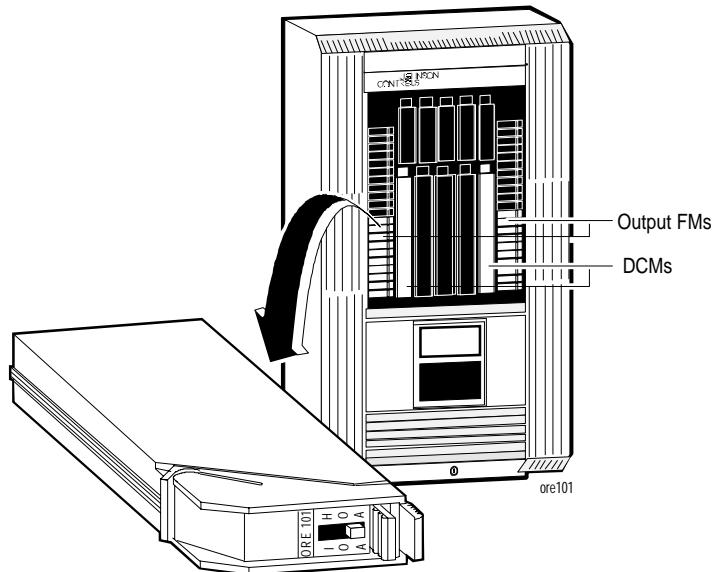


Figure 1: ORE Function Module Locations

Application

The ORE Function Module is typically used for:

- control of 2-wire motor starter circuits, or similar electrical equipment, so equipment fails to a known state when the DCM loses power

Capabilities

Table 1: ORE Function Module Capabilities

Capability	Description	Purpose
Input from DCM	DCM inputs a digital command.	Allows DCM to provide automatic control of outputs.
Hand/Off/Auto (HOA) Status Switch	Switch selects one of <ul style="list-style-type: none">- Auto--DCM/relay control of outputs.- Hand--Opens the Common N.C. circuit and closes the Common N.O. circuit.- Off--Opens the Common N.O. circuit and closes the Common N.C. circuit. Note: Hand/Off positions mechanically force a contact transfer.	Allows for manual override of DCM control for special situations. Allows for local/manual control, even if the DCM is not present.
Power on Reset	At low power or after power up, relay is de-energized.	Provides controlled restart.
Output to Field	Module provides Form C contact control.	Provides contact closure control for field devices.

Theory of Operation

Figure 2 is a functional diagram of the ORE Function Module.

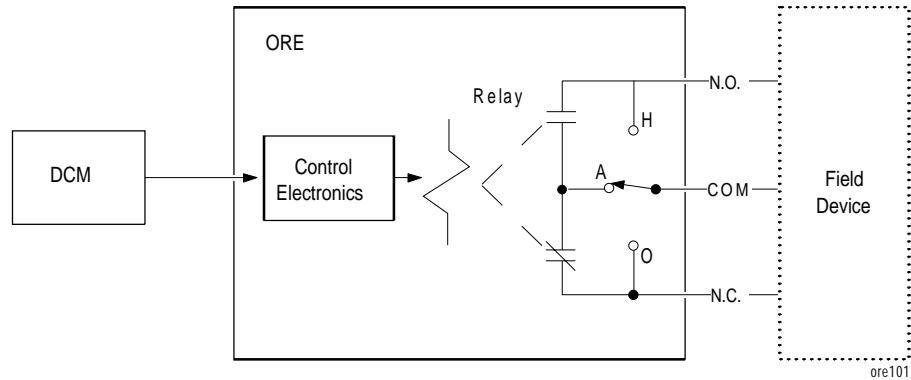


Figure 2: ORE Function Diagram

Under DCM control, the process is:

- The DCM provides control signals to the ORE.
- When the relay is energized, its pair of contacts change state: The N.C. contacts open, and the N.O. contacts close.
- A manually controlled HOA switch can disable the DCM control of the ORE outputs, and mechanically produce either an energized (H) or de-energized (O) condition. This control is mechanical, and works even if the NCU or NEU is not powered up. The status of this switch is reported back to the DCM.

Specifications**Table 2: ORE Function Module Specifications**

Category	Specifications For Configurations
Product Code Number	FM-ORE101
Output Range	Two states (contact open/closed with respect to Common) on each of two leads
Output Limits	1 amp, continuous
Output Protection	Common output fused at 3 amps with a slow blow, non-field replaceable fuse.
Inrush Current	30 amps maximum
Relay Type	Form C relay having a Normally Open (N.O.) and Normally Closed (N.C.) contact with a common connection between them. Contacts are "break-before make" type.
Relay Contact Rating	120 VAC, at 1 amp max., pilot duty
Relay Insulation Resistance	1,000 M ohms (min) from contacts to coil
Relay Dielectric Strength	2,000 VAC, 50/60 Hz, (for 1 minute) from contacts to coil 1,000 VAC, 50/60 Hz, (for 1 minute) between N.O. and N.C. contacts
Relay Service Life	Mechanical: 10,000,000 operations Electrical: 300,000 operations for inductive load at 120 VAC, at 1 amp with a power factor of 0.4
Response Time	Maximum: 100 msec
Default Condition	At low power or after power up, relay is de-energized.
Source Power	Power is from the PWR in the NCU/NEU.
Operating Environmental Requirements	32 to 122°F (0 to 50°C) 10 to 90% noncondensing RH 86°F (30°C) maximum dew point
Storage/Shipping Environmental Requirements	-40 to 158°F (-40 to 70°C) 5 to 95% noncondensing RH 86°F (30°C) maximum dew point
Size	0.85 in. H x 2.6 in. W x 7.0 in. L (2.2 cm H x 6.6 cm W x 17.8 cm L)
Weight	0.5 lb (0.22 kg)
Agency Compliance	FCC Part 15 Subpart J—Class A, UL 916, CSA C22.2 No. 205
Agency Listings	UL Listed and CSA Certified as part of Metasys®

Installation Procedures

General Information

When installing and connecting function modules:

- follow NEC and local codes
- observe maximums as specified in the specification table and in these installation guidelines

Motor Starter

Figure 3 diagrams the wiring for motor starter applications using the ORE Function Module.

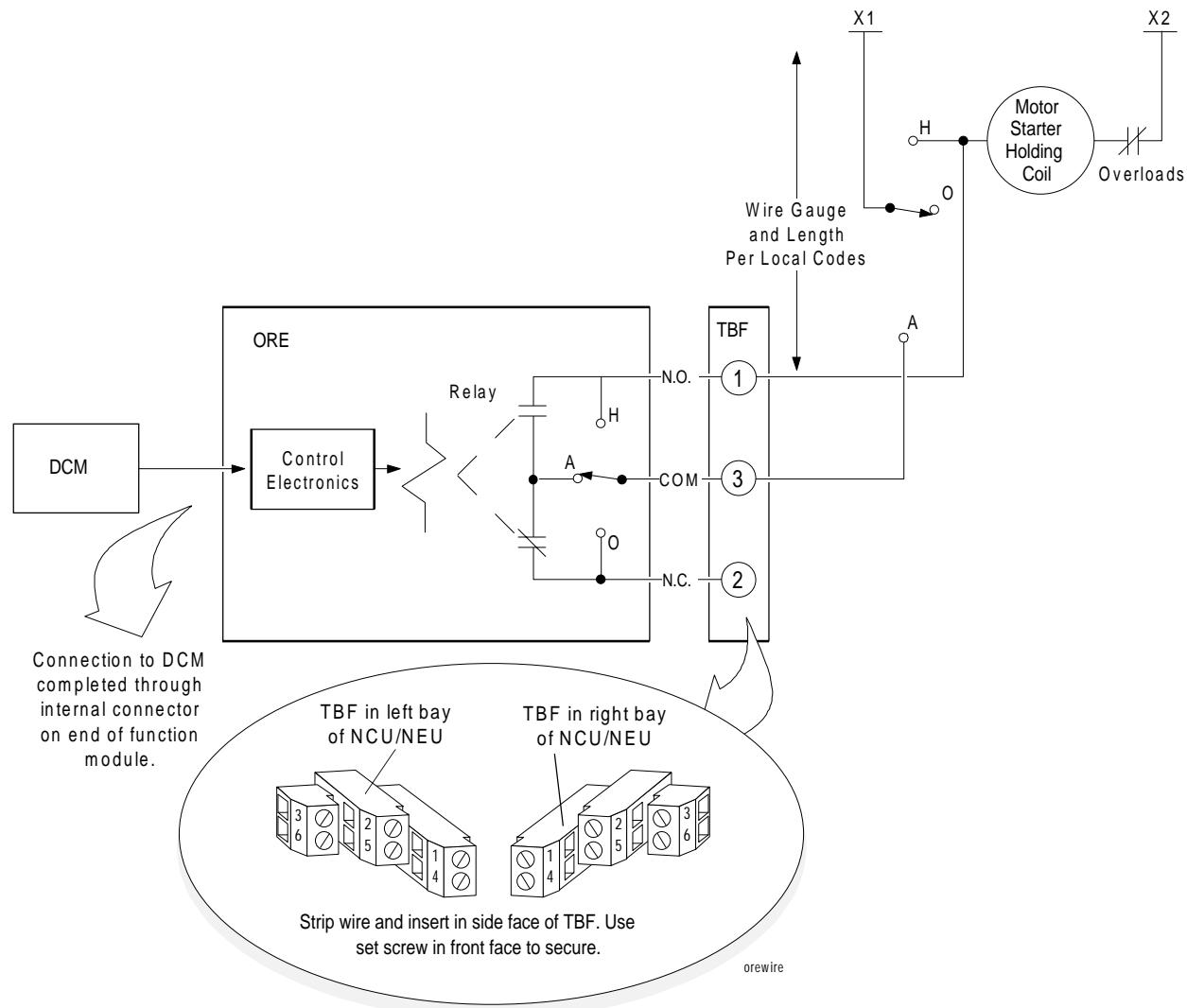


Figure 3: Wiring for Motor Starter Applications

Physical Installation

Assumptions

The following procedure for the physical installation of the ORE Function Module assumes:

- Panel (NCU or NEU) is installed.
- Connections to field devices are complete.
- You have engineering drawings defining details for the installation.
- You are familiar with Metasys Network terminology, and the location and operation of power switches.

Procedure

For each ORE Function Module in the network, perform the following steps.

1. Set the HOA switch to off.
2. Refer to the engineering drawings and identify the proper panel and slot number location for this module.
3. Open latch.
4. Insert the module in the appropriate slot.
5. Close latch, locking function module in place.

Commissioning Procedures

Physical Verification

Assumptions

The following procedure for the physical verification of the ORE Function Module assumes:

- Physical installation at the NCU/NEU panel is complete.
- Power is available at the panel power supply, and at the field device.

Procedure

For each ORE Function Module in the network, perform the following steps.

1. Power up the appropriate DCM power supply.
2. Set the HOA switch to Hand. Verify that the device is activated and/or that the appropriate device is deactivated as defined in the engineering drawings.
3. Set the HOA switch to OFF. Verify that the device is activated and/or that the appropriate device is deactivated as defined in the engineering drawings.

Software Verification

Assumptions

The following procedure for the software verification of the ORE Function Module assumes:

- Physical installation at the NCU/NEU panel is complete, including NCM, DCM, FM, etc.
- The operating software for the network has been downloaded to the NCM controlling the panel.
- An Operator Workstation is available near the panel.

Procedure

For each ORE Function Module in the network, perform the following steps.

1. Select the System summary that includes this ORE object.
2. Set HOA switch on the ORE to Auto.
3. Use the software override command and verify that the object's Value attribute (as seen in the summary) matches the actual value for the field device.

Troubleshooting Procedures

Troubleshooting Chart

Use the diagram in Figure 4 (next page) as a troubleshooting guide. It applies for failures between point objects and field devices connected through an ORE Function Module.

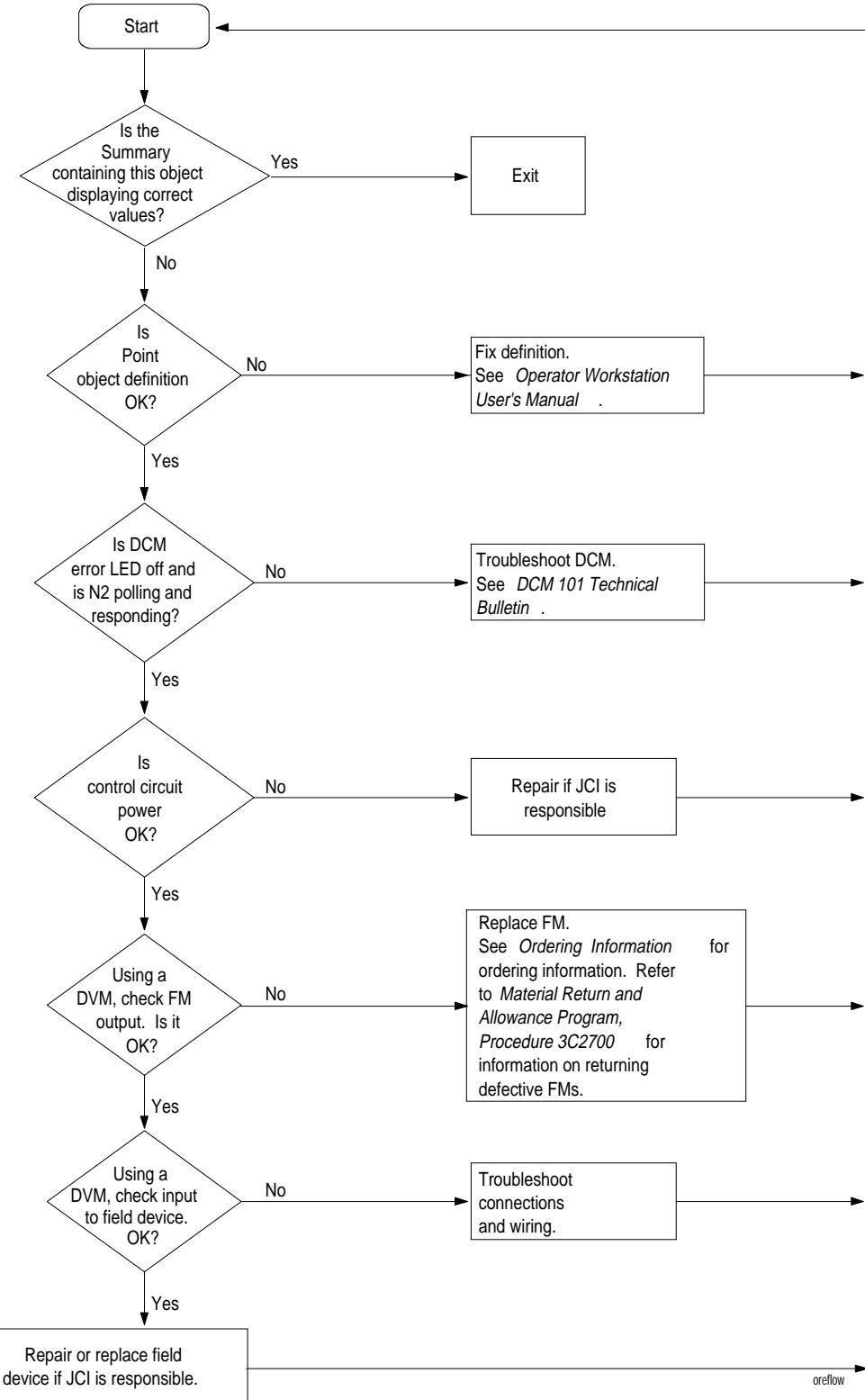


Figure 4: ORE Troubleshooting

***Ordering
Information***

Table 3: Ordering Information

Description	Product Code Number
ORE Function Module	FM-ORE101-0

Notes

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